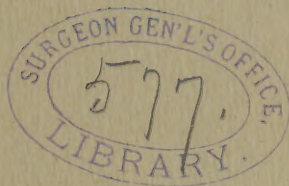


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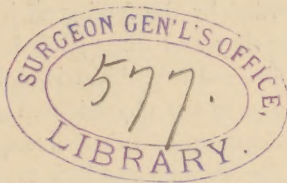
THE MODERN TREATMENT
OF TUBERCULOSIS,
*INCLUDING SPECIFIC AND
ORGANIC MEDICATION.*

BY
PAUL PAQUIN, M. D.,
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To appear before a medical body of the high character of the Medical Society of Virginia is an honor of which any medical man may well be proud, and to be allowed to participate in the scientific deliberations of this learned congregation is for me a glad moment, a distinguished privilege valued most highly, with feelings of gratitude that the humble efforts of those in the ranks of the practitioners are considered with fairness by the savants of the East and South who lead in the medical sciences, and their accomplished associates who band together for the good of the profession and thereby the benefit of mankind.

My meagre efforts, as you well know, have been for many years in the line of sanitary science—an ungrateful field, which the profession alone appreciates to its

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full value, and which rewards its tillers only in the pleasure afforded by the feeling of having accomplished something worthy and some good for their fellow man. In this domain, not a problem is more important to the people, not one to the physicians, than that of the continual encroachment of tuberculosis on the human system. The disease has reached every nation; invaded the altitude and latitude of every clime; affects every organ of the human body; kills at every age—even the unborn babe; and in one form or another causes fully one fifth of the death-rate of the whole world, and is decreasing the physical power, the mental strength, the moral integrity of man, woman, and child. If one is to judge from the observations of every day in practice, in the cities particularly, and one compiles statistics, he will reach the conclusion that perhaps five millions of people, of the seventy millions in the United States, suffer from some form of tuberculosis. These seem astounding figures, but if you will study the statistics of the hospitals, poorhouses, clinics, charity institutions, penitentiaries, monasteries, and the history of your own professional families, conscientiously, tabulating concisely all cases of tuberculosis of all kinds, developed to the point of unmistakable physical diagnosis, you will find millions of people known to the profession to be affected with some kind of respiratory tuberculosis, and many more who have the disease in a milder form. Naturally, these figures are deductions from numerous sources and may be inexact, but not to a degree to affect the grand total materially, or to weaken the statement that tuberculosis is the most prevalent of all infectious diseases, and the additional assertion that it is the most destructive of life and happiness.

One may form a sufficiently accurate estimate by observing, for a year, the statistics of the death reports, particularly of large cities, such as St. Louis, Chicago, New York, and Philadelphia.

Needless for me to say, then, that the special field of medico-sanitary science I have followed for some years—viz., the study and treatment of tuberculosis, particularly pulmonary consumption—as onerous and unfruitful as it is, is worthy of the best medical efforts of the most advanced minds among you. For me to present the subject is only to open a discussion among the talented men present which shall benefit all, and from which I shall gather valuable information and advice to prosecute more diligently and more energetically than ever the thankless task I have undertaken, in the accomplishment of which many of you here present have aided me most generously, financially and scientifically, for which highly appreciated support I feel deeply grateful.

The modern treatment of tuberculosis means that its therapy is founded on natural law. Recognizing the specific cause of the malady and the nature of the fields necessary for the development of its germs, it seeks to vitiate the soil and make it unfit, and aims to antagonize these parasites in their physiologic elements.

The Soil.—The bacillus of tuberculosis may develop in any human being in any of the organs, but a requisite for this development is proper nutrition and freedom from competent inimical natural forces. The germs of consumption reach, probably, the lungs of every human being in a large city, and yet only about a sixth die of *pulmonary consumption* proper. It is obvious that

Nature protects those who escape, and Nature accomplishes this great task in two ways: First, in offering to the microbic invaders an unfruitful soil for their rapid development; second, in opposing to them an army of scavengers—phagocytes and other defensive forces. In this very plan of natural defense of the economy we find the principles of organic therapy. It is, indeed, on the knowledge of the physiological laws herein indicated and their relation to the tuberculous pathological developments that modern therapy of consumption rests forever.

Weakened respiratory organs exposed to tubercle bacilli offer less resistance than before to their proliferation. The effects of different bacterial affections, such as *la grippe*, on the system, particularly the lungs, or a catarrhal condition of the bronchi, the alveoli, the throat, prepares a suitable soil for the bacilli. A night at the altar of Bacchus or a more continuous alcoholic excess; the drain and excitement and bronchial irritation resulting from debauch or unwise and too assiduous worship at the shrine of Venus; transition from a cold to a warm temperature, and *vice versa*; dampness; social functions demanding more or less violent exercise, and transgressions of the rules of the usual course of life are circumstances that prepare the field for the germ of consumption to grow. On the other hand, we must admit the feebleness in defensive power and the scant opportunity for escape of the organisms born of tuberculous parents. If not naturally deficient congenitally, either physically, mentally, or morally, or in every one of these qualities, they are exposed to contagion from their birth, and must, almost of necessity, in view of the ignorance of the people, as a rule, on

this subject, and the laxity of hygienic measures, become infected at the first sufficient exposure.

Modern Treatment.—When I say modern treatment, I do not relegate long-tried preventive and curative measures to the rear. Old time remedies for general and special purposes are valuable still. The field for the development of the germs of consumption being understood, we must realize furthermore that the germ of consumption itself, by its alterations of the tissues wherein it grows, produces fields for the growth of other germs, pus and other destructive microbes, which proliferate at a marvelous rate of speed and whose quality is more or less deleterious. Consequently, therapeutic measures empirically administered in the past, in vogue for years before natural law was appealed to, are now better understood and their place among the rational remedial agencies is granted by all who study and practise without prejudice, as is incumbent on the physician deserving the name. But what modern medicine implies as essential factors in the treatment of tuberculosis is an attack on the very field of development, consisting of attempts to alter it to a degree where the germs either can not grow or can develop with difficulty, and, at the same time, an attack against the tubercle bacilli themselves and their associates of other bacterial nationalities. These are the organic and specific therapeutic measures of modern therapy; and the medication of the polypharmacist—treating symptoms rather than the cause and the consequent pathological developments; masking conditions rather than altering them for the better; calming pain with narcotics, and thus creating feelings of false well-being; persuading the victims that they are safe, and shortening their life by

an expectant policy, rather than telling the truth and prolonging existence by energetic efforts—must be resorted to only for special emergencies as accessory measures. The nature of every case should be fully understood and met at the very root by physiological and specific therapeutics.

To alter the favorable fields for tuberculous development into unfavorable grounds has been the hope and effort of many who believe in the now proved doctrine of the bacillar origin of tuberculosis. To this end, internal and direct medication have been tried; hygienic and climatic influences have been resorted to; dietetics and gymnastics have had their followers. Unfortunately, there has been a tendency to unwarranted exclusiveness in the selection of measures, and this, too, irrespective of the conditions met with. In the minds of many, a consumptive is a consumptive, and therefore the same treatment will apply. For instance, as to climatic influences: If a dozen patients with consumption—three with infiltration, three with fibrosis, three with cavities, three with microbial complications and hæmorrhages—are placed under a certain physician's care, he will send them all to Colorado or California, both regions of many climates and conditions, without restriction as to locality even; or send them elsewhere, where presumably "it is high and dry." This unfortunate and too prevalent practice has hastened many a death. Another physician uses irritant inhalations for every case, no matter whether there is severe bronchial inflammation that may be increased or not. Another uses creosote exclusively in every and in all cases, and refuses to consider anything else. For the destruction of the germs directly or indirectly, by a true chemical action, there have been used

also exclusive treatments, chiefly by inhalations, such as creosote; injections into tuberculous deposits of, say, iodoform; hypodermic medication with such drugs as carbolic acid under its true or some compound nomenclature. But all of this to no avail. The truth is that there does not exist, from the very nature of tuberculosis there can not exist an individual therapeutic agent, from any source, that will reach satisfactorily every case, irrespective of class, stage, and complications. Every case of tuberculosis, if we would arrest it, must be treated on its merits, using for each one the measures demanded by the history and conditions present then, depending however, for the alteration of the soil of growth and the destruction of the microbes on the organic and specific forms of treatment that are based on natural law and proved effective in proper conditions.

Thus it is required that proper hygienic surroundings be instituted; it is demanded that proper food be forced on the patient; it is most important that lung gymnastics be practised; it is useful often to prescribe cold baths, salt rubs, alcoholic frictions, or oil baths; it is necessary to keep the organs of digestion in proper condition and keep the nervous system, the circulation, the kidneys in as near a physiological equilibrium as possible, and sometimes to exalt their natural functions. But all of these measures, if they accomplish the utmost possible, can only restore the organs to something near the force they had before, whereby an opportunity is offered the cells of the invaded system to fight longer for their life and the integrity of the whole body. Once the germs have attacked or altered the fortresses, the ordinary measures mentioned scarcely ever can produce such natural powers as will result in repairing the breaches

sufficiently, and probably never do result in destroying the germs totally, but only succeed once in a while in holding them at bay for a time. The repair of tuberculous organs, not broken down beyond rejuvenation; the arrest of the bacilli in their destructive work; interference with their allied disintegrators, constitute precisely what is attempted by specific medication. Not discarding any of the useful, logical measures mentioned, specific agents are used to strike at the very basis of supply and attempt the destruction of the warring microbes, and this is accomplished by bringing into play the forces of Nature calculated to exalt the physiologic germicidal power resident within the organism of man, and allow the organization to clear the *débris* and strengthen and rebuild the weakened and partly ruined structures.

Now, as to the specific remedies: First, I will mention tuberculin. This agent, under different names—antiphthisin, tuberculocidin, etc.—is an agent which provokes the formation in the system of antitoxine, on the same principle that diphtheria germs and toxines growing in an animal produce an antitoxine which may neutralize the activity of diphtheria poison. Tuberculin, then, when used in man's system, increases the amount of tubercle antitoxine, and to the extent that it does this tuberculin is a useful agent. But, unfortunately, the extent and degree of the antitoxine product is too limited, and has the great disadvantage of being produced in the body already suffering from poisons. Precisely the same results are sought in the production of antitubercle serum. We use a horse instead of an already diseased human body. In this animal we introduce for months strong tuberculin, and then the tox-

albumin of dead bacilli, and then sometimes, in the veins, some living germs, and when by this process the blood of the horse is strongly antagonistic to the germ of consumption and its toxins, we filter it, test the serum obtained on guinea-pigs, and, if it is found potent, use it by hypodermic injection into man's system. We thus supply the human blood with antitoxine already prepared, of a degree of antitoxic power incomparably higher than can possibly be produced in a sick man, and without the least draft on his forces.

The Measure of Antitoxic Value.—Much stress is now laid on the necessity of offering an antitubercle serum with non-varying antitoxic power. Maragliano, it is alleged, measures serum by the amount of tuberculin a certain quantity of it may neutralize. On this basis, as well as with reference to the neutralization of the toxalbumins contained in the structure of the germs, the measurement is not difficult. But, as yet, the mode of measurement is not so valuable as in the treatment of diphtheria, in which one has to deal with a quick malady, due principally to blood-poisoning by the virus of the diphtheria germs. This virus needs a certain amount of antitoxine for its neutralization. The amount necessary is indicated by the antitoxic units on a basis suggested by Behring and adopted by others. Not so to the same extent in tuberculosis in the great majority of cases. We have to deal here usually with a mixed disease, and besides with lesions that must be considered aside from the tuberculous toxic phenomena. Tubercle antitoxine can have only an indirect effect on lesions, and this because of restored physiological faculties. Besides, the basis of measurement is easier in diphtheria antitoxine than in tuberculosis, because,

with slight variation, a given quantity of diphtheria antitoxine will kill a given weight of healthy guinea-pig. Not so with tuberculin and toxalbumins. Two guinea-pigs in health, of the same weight, will resist differently to the same quantity of toxins of the same culture; one may die and the other survive; so that the very basis of unit measurement is not as reliable as in diphtheria, and can not as yet be adopted with the same mathematical precision. But it is conceded that a unit of measurement is very desirable as a scientific recommendation at least of the serum value. After two years' tests of measurements of various kinds, we realize the difficulties better, perhaps, than those not as conversant with laboratory experimentation. We have come to a measurement that will offer, besides scientific reliance, practical value in acute tuberculosis, and the cases without too much disintegration and mixed infection. In chronic, advanced, and complicated cases, antitoxine units can have only a relative value.

Tabulation of results: In a recent publication Dr. Zaeslin, of Genoa, gives an interesting account of the results obtained abroad with antitubercle serum in his clinic and in the practice of Maragliano. His results, I am glad to say, support every statement published by me in the past, and do not surpass those obtained in this country by our profession.

Up to date, September 1, 1896, we have received reports, tabulated more or less accurately, of two hundred and twenty-five cases. We have reports touching on more than four times that number which are not written so as to be available to make an absolutely reliable digest of them at this date. There are among them a number of improvements, and some alleged recoveries.

The details of conditions and results of the two hundred and twenty-six cases are as follows, foreign classification being employed to make comparisons of American and foreign work more intelligible:

Pulmonary tuberculosis :	No. of cases.
Class 1. Destructive broncho-pneumonia and cavities. . . .	37
" 2. Destructive broncho-pneumonia, without recog- nizable cavities	66
Class 3. With diffuse febrile pneumonia, with or without a destructive process	19
Class 4. With diffuse non-febrile broncho-pneumonia, with or without destructive cavities	19
Class 5. With circumscribed febrile broncho-pneumonia .	35
" 6. With circumscribed apyretic broncho-pneumonia.	13
Diagnosis not reported clear enough for classification . . .	32
Hip-joint tuberculosis	2
Laryngeal tuberculosis.	2
Ovarian tuberculosis	1
	<hr/> 226

In every one of these cases the diagnosis was verified microscopically. During the treatment of these two hundred and twenty-six cases the following conditions obtained:

Effect of serum on fever: Subsided, 60; reduced, 56; stationary, 26; not recorded, 84.

Effect of serum on night sweats: Subsided, 69; unchanged, 17; not recorded, 140.

Result of serum on weight: Increased, 125; unchanged, 15; decreased, 27; not recorded, 59.

Result of serum on strength: Increased, 154; unchanged, 9; decreased, 24; not recorded, 39.

Result of serum on appetite: Increased, 114; unchanged, 15; decreased, 31; not recorded, 66.

Result of serum on local signs: Disappeared, 46; mitigated, 58; unchanged, 29; not recorded, 94.

Result of serum on tubercle bacilli: Disappeared, 40; reduced, 103; altered, 7; not recorded, 76.

Result of serum on general well-being, exclusive of the 40 cures :
Improved, 145 ; unchanged, 9 ; not recorded, 32.

Number of recoveries that seem complete and permanent	40
“ “ apparent recoveries with existing lesions <i>in statu quo</i> . .	3
“ “ improved capable of performing usual duties	41
“ “ “ to a lesser degree	69
“ “ deaths reported	32
“ “ cases disappeared from observation or under various treatments	41
	<hr/> 226

As to the pulmonary cases, the extent, stage, and importance of the conditions at the beginning of treatment were as follows:

In Class 1 there were 20 cases in advanced stage ; 3 in early stage.

“ “ 2 “ “ 33 “ “ “ “ 6 “ “ “	
“ “ 3 “ “ 12 “ “ “ “ 0 “ “ “	
“ “ 4 “ “ 9 “ “ “ “ 0 “ “ “	
“ “ 5 “ “ 12 “ “ “ “ 3 “ “ “	
“ “ 6 “ “ 7 “ “ “ “ 1 “ “ “	
<hr/> 93	<hr/> 13

Not classified accurately enough for satisfactory description of the stage 115

These ranged between the first and third stages, and belonged to various classes.

Now, it is needless to add that many physicians who have used serum have not reported. It should be remembered, also, that from eighty to ninety-five per cent. of the patients who have so far consented to use serum are in the third and last stages of the disease, and, therefore, by no means fair tests of the value of the serum in earlier and purer cases of tuberculosis. Nothing can cure the vast majority of advanced cases. My own cases were treated exclusively with serum, and the reports above given cover only those of which I am reliably

informed, and the diagnosis of which was reliable. It is obvious that if we would give tuberculous patients all the chances possible of recovery, we must begin their treatment at the earliest possible moment, when the first slight symptoms appear, instead of depending exclusively on drugs and climate until it is too late for the help of organic and specific treatment.

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EDITED BY

FRANK P. FOSTER, M.D.

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